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10/826,207

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Jerry H.C. Lee

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OWENS CORNING
2790 COLUMBUS ROAD
GRANVILLE, OH 43023

EXAMINER

MATZEK, MATTHEW D

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/826,207 | Applicant(s) LEE ET AL. | |
| | Examiner MATTHEW D. MATZEK | Art Unit 1794 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-15,17-19,21-23 and 25-27 is/are pending in the application.
- 4a) Of the above claim(s) 26 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-15,17-19,21-23 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

1. The declaration under 37 CFR 1.132 filed 12/7/2007 is insufficient to overcome the rejection of claims 9-15, 18, 19, 21, 23 and 25 based upon Miller et al., Marzocchi et al., Williams et al. and Kennephol et al. as set forth in the last Office action because: the declaration fails to demonstrate why the improved tear strength due to the addition of elemental sulfur is surprising and/or unexpected at the claimed values. Examiner is in agreement with Applicant that there is a considerable improvement in tear strength due to the addition of elemental sulfur to the shingle composition, but nothing set forth in the declaration provides support for the allegation that one would find such an improvement to be unexpected.

2. Claim 9 has been amended to now contain the limitations set forth in previous claims 20 and 24. Claim 25 has been amended and its previous 112 2nd paragraph rejection has been withdrawn. The amended claim contains no new matter. The previous rejections of claims 9-15, 17-21, 23 and 25 have been withdrawn as the previously applied art fails to provide for the addition of elemental sulfur at levels ranging from about 0.1-5 weight percent of an asphalt-based coating. Claims 4, 16, 20 and 24 have been cancelled and claims 26 and 27 have been withdrawn from consideration. Claims 1-3, 5-15, 17-19, 21-23 and 25 are currently active.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 3, 5-8 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US 6,228,785) in view of Marzocchi et al. (US 4,265,563) as set forth in the previous Office Action.

a. Miller et al. teach an asphalt-based roofing material comprising a substrate coated with asphalt (Abstract). The roofing material comprises a glass fiber substrate coated with asphalt and a surface layer of granules embedded in the asphalt coating (col. 1, lines 13-20). The fibers of Miller et al. meet the newly added limitation of fibers having properties suitable for forming a roofing mat in a roof covering. The roofing material may further comprise polymers (col. 3, line 65-col.4, line 1). Miller et al. is silent as to use of a silane-sizing agent for the glass fibers in the asphalt.

b. Marzocchi et al. teach that glass fibers may be used as reinforcement in resins, rubbers, and asphalt (organic material) for use in roads, driveways, bridges, walks and roofs (col. 2, lines 10-20). The glass fibers may be treated with a silane coupling (sizing) composition along with sulfur leaving secondary or primary as well as elemental sulfur dispersed on the surface of the glass fibers (col. 9, lines 35-43). When added to a resin system (asphalt, tar, etc.) the glass fibers become directly bonded to the resin phase to improve strength and impermeability of the properties of the matrix (col. 9, lines 43-50). The sulfur content of the silane coating may be from 0.05 to 40% with a preference from 0.1 to 7% (col. 9, lines 54-59). Overlying the substrate layer 1 (fiberglass) is a wear course 2 comprising an aggregate and asphalt mixture (col. 4, lines 3-5). The asphalt aggregate may comprise clays, gravel, glass flake or calcium carbonate (col. 4, lines 53-69). In one embodiment an asphaltic, glass flake layer is added on top of the substrate (fiber/asphalt) layer (col. 5, lines 55-63).

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c. Since Miller et al. and Marzocchi et al. are from the same field of endeavor (i.e. asphalt covered fiber glass building materials), the purpose disclosed by Marzocchi et al. would have been recognized in the pertinent art of Miller et al.

d. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the glass fiber mat of the composite of Miller et al. with the silane sizing agent with the motivation of improving the adhesion between the fiber glass and asphalt phases.

e. Neither Miller et al. nor Marzocchi et al. explicitly teach the claimed feature of forming cross-links between the sulfur groups and the organic material, the claimed tear strength or the claimed tensile strength, it is reasonable to presume that said properties are inherent to Marzocchi et al. Support for said presumption is found in the use of like materials (i.e. glass fibers sized with a sulfurous silane composition and coated with an organic material). The burden is upon Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties of claims 1, 6 and 22 would obviously have been present once the Marzocchi et al. product is provided. Reliance upon inherency is not improper even though rejection is based on Section 103 instead of Section 102. *In re Skoner, et al.* (CCPA) 186 USPQ 80.

4. Claims 1-3, 5-8 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US 6,228,785) in view of Williams et al. (US 4,210,459).

a. Miller et al. teach an asphalt-based roofing material comprising a substrate coated with asphalt (Abstract). The roofing material comprises a glass fiber substrate coated with asphalt and a surface layer of granules embedded in the asphalt coating (col. 1, lines

13-20). The fibers of Miller et al. meet the newly added limitation of fibers having properties suitable for forming a roofing mat in a roof covering. The roofing material may further comprise polymers (col. 3, line 65-col.4, line 1). Miller et al. is silent as to use of a sulfide silane-sizing agent for the glass fibers in the asphalt.

b. Williams et al. teach the use of a polysulfide silane-coupling (sizing) agent for glass fibers in rubber composites (Abstract). The coupling agent may also comprise vinyl groups, yielding a vinyl silane (col. 4, lines 13-40). It is generally preferred to size the fibers prior to their incorporation into the composite (col. 14, lines 48-60). The polysulfide organosilicon-coupling agent may also be added to the rubber matrix and the sulfur concentration may be from about 0.5 to 4 weight percent of said matrix (col. 13, lines 47-52 and col. 14, lines 24-28).

b. Since Miller et al. and Williams et al. and from the same field of endeavor, (i.e. fiber glass in organic matrices), the purpose disclosed by Williams et al. would have been recognized in the pertinent art of Miller et al.

c. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the sulfide silane coupling agent of Williams et al. on the glass fibers as well as in the matrix motivated by the desire of simplifying the coating of the glass fibers to one chemical treatment and to improve the strength of the resin phase with the addition of the polysulfide silane.

d. Neither Miller et al. nor Williams et al. explicitly teach the claimed feature of forming cross-links between the between the sulfur groups and the organic material, double-bonds, the claimed tear strength or the claimed tensile strength, it is reasonable to

presume that said properties are inherent to Williams et al. Support for said presumption is found in the use of like materials (i.e. glass fibers sized with a sulfurous silane composition and coated with an organic material). The burden is upon Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. Reliance upon inherency is not improper even though rejection is based on Section 103 instead of Section 102. *In re Skoner, et al.* (CCPA) 186 USPQ 80.

5. Claims 9-15, 17-19, 21, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US 6,228,785) in view of Williams et al. (US 4,210,459) as applied to claim 1 above, and further in view of Liang et al. (WO 00/44975). The disclosures of Miller et al. and Williams et al. fail to teach the use of elemental sulfur in the asphalt matrix.

a. Liang et al. disclose a modified bituminous composition for roof membranes (title) comprising asphalt and elemental sulfur for cross-linking within the composition at loading rates ranging from about 0.05 to 0.2 weight percent (page 4).

b. Since Miller et al. and Liang et al. are from the same field of endeavor (i.e. asphalt-based roofing), the purpose disclosed by Liang et al. would have been recognized in the pertinent art of Miller et al.

c. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention of Miller et al. the elemental sulfur of Liang et al. with the motivation of forming a bituminous composition with a range of viscosities that are readily processed as compared with conventional non-cross-linked systems as disclosed by Liang et al. (abstract).

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e. Claims 10-13 are rejected as the polysulfide silane disclosed by Williams et al. possesses sulfur and vinyl groups (col. 4, lines 18-34, Williams et al.).

f. Claim 14 is rejected as the combination of the instantly applied art yields an article that is compositionally and structurally the same as that of Applicant.

g. Claims 19 and 20 are rejected as the amount of sulfur instantly applied meets the claimed limitations and provides the bonding between the glass fibers and the asphaltic matrix (col. 14, lines 24-34, Williams et al.).

Response to Arguments

6. Applicant's arguments with respect to claims 2, 9-15, 17-19, 21, 23 and 25 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's arguments with respect to claims 1, 3, 5-8 and 22 filed 9/17/2007 have been fully considered but they are not persuasive.

8. Applicant argues that it is improper to combine the Miller et al. and Marzocchi et al. references as they are from different fields of endeavor. As set forth in the prior art section of Marzocchi it is well known that glass fibers have been used extensively in the reinforcement of resins, rubbers and asphalts (col. 2, lines 12-15) in the creation of both roof coverings and road foundations (col. 3, lines 3-41). Therefore, one of ordinary skill in the art would have been motivated to look to Marzocchi to improve the adhesion between the glass fiber and asphalt matrix phases as they are used in the inventions of Miller and Marzocchi are from the same field of endeavor, asphalt construction materials. Mr. Jones' expert opinion has been taken into account, however both Miller and Marzocchi use asphalt matrices with glass fiber reinforcement and both Miller and Williams set forth glass fibers in organic matrices. By improving the bond

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between the matrix and reinforcement phase of the composite the structural integrity of the article is improved. Therefore, it would have been reasonable for one of ordinary skill in the art to look to other asphalt or organic composites that use glass fibers for reinforcement for means to improve adhesion between the two phases of the composite.

9. Applicant argues that the teachings of Marzocchi et al. relate to glass flakes in a road paving composition not to fibers having properties suitable for forming a roofing mat in a roof covering as recited in claim 1. Examiner has relied upon Miller et al. to provide the newly claimed fibers having properties suitable for forming a roofing mat in a roof covering. Examiner has relied upon Marzocchi et al. to teach the use of a silane-sizing agent.

10. Applicant argues that if the teachings of Miller et al. and Marzocchi et al. are combined the resulting product would not be a roofing material having significantly improved tear strength as claimed. Applicant has failed to demonstrate how the combination of Miller et al. and Marzocchi et al. results in a structurally different product than that which is currently claimed and as such failed to adequately establish why the resulting product would not be a roofing material having significantly improved tear strength as claimed. The addition of the sizing material to the Miller et al. invention would result in improved adhesion between the glass fibers and the rest of the roofing material, thereby improving the overall tear strength.

11. Applicant argues that the background section of Marzocchi et al. does not establish that its disclosure is applicable to the fields of road paving and roof coverings. The prior art section provides background of the invention and related areas which have influenced and can be influenced by the current invention. As such, the particular prior art section in dispute serves to provide information pertaining to related industries and how they intersect with the current

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invention and how teachings from said industries have impacted the current invention. This is clear indication that the disclosure of Marzocchi et al. is relevant to the fields of road paving and roof coverings.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW D. MATZEK whose telephone number is (571)272-2423. The examiner can normally be reached on M-F, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571.272.1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew D Matzek/
Examiner, Art Unit 1794

/Norca L. Torres-Velazquez/
Primary Examiner, Art Unit 1794